CLAIMS

1. A display system, comprising:

an optical panel including a plurality of optical waveguides stacked together, with first ends thereof defining an inlet face, and opposite ends thereof defining an outlet face;

a projector that projects an image beam outbound across said inlet face for display on said outlet face;

an imaging device that images said image beam is optically aligned between said projector and said inlet face;

at least one optical detector that detects a location on said outlet face of an inbound light spot; and

at least one channeling element that channels at least a portion of said light spot from said panel to said at least one detector.

2. A display system according to claim 1 further comprising a controller operatively coupled to said imaging device and said at least one detector, wherein said controller is configured for controlling said imaging device to display a visible indicator on said outlet face at a location corresponding to said detected spot location.

3. A display system according to claim 2 wherein said controller is further configured for controlling said imaging device to display said indicator at a location on said outlet face at substantially said detected spot location.

4. A display system according to claim 2 wherein said controller is further configured for controlling said imaging device to additionally display a menu on said outlet face and position said indicator on said menu in response to movement of said spot along said outlet face.

5. A display system according to claim 2 wherein said indicator is in the form of a visible cursor.

6. A display system according to claim 1 further comprising a remote pointer configured for emitting a light beam toward said outlet face to form said inbound light spot.

7. A display system according to claim 6 wherein said light beam emitted from said remote pointer comprises infrared light.

8. A display system according to claim 1 wherein said outlet face is substantially parallel to said inlet face.

9. A display system according to claim 1 wherein said at least one channeling element optically couples said at least one detector to at least a portion of said waveguides.

10. A display system according to claim 1 wherein each of said waveguides extends horizontally across the width of said panel, and said waveguides being stacked together vertically along the height of said panel.

11. A display system according to claim 10 wherein said at least one channeling element optically couples said at least one detector to at least a portion of said waveguides along said panel height.

12. A display system according to claim 10 wherein said at least one channeling element optically couples said at least one detector to substantially all of said waveguides along said panel height to thereby provide corresponding, substantially full-height coverage of said outlet screen.

13. A display system according to claim 9 wherein said at least one channeling element includes a channeling element inlet face optically coupled to at least a portion of said waveguides, and a channeling element outlet face optically coupled to an area of said at least one detector.

14. A display system according to claim 13 wherein said channeling element inlet face is larger in area than said channeling element outlet face.

15. A display system according to claim 13 wherein said channeling element inlet face is larger in area than an area of said at least one detector.

16. A display system according to claim 1 wherein said at least one channeling element bridges said panel along one edge of said panel.

17. A display system according to claim 1 wherein said at least one channeling element includes a pair of said channeling elements, wherein said pair of said channeling elements bridges said panel along opposite edges of said panel.

18. A display system according to claim 13 wherein said at least one channeling element comprises a plurality of auxiliary optical waveguides, with first ends thereof defining said channeling element inlet face, and opposite ends thereof defining said channeling element outlet face.

19. A display system according to claim 18 wherein said at least one channeling element further comprises a light coupler optically interconnecting said auxiliary waveguides and said waveguides of said optical panel.

20. A display system according to claim 18 wherein said optical panel includes opposite edges having exposed portions of said waveguides of said optical panel, and wherein said auxiliary waveguides are optically coupled to one of said optical panel edges.

21. A display system according to claim 20 further comprising:

a pair of said channeling elements optically coupled to respective ones of said optical panel edges; and

a pair of said at least one detector optically coupled to respective channeling element outlet faces.

22. A display system according to claim 21 further comprising a comparator operatively coupled to said pair of detectors for comparing a relative intensity of said spot to determine a lateral position thereof along said outlet face.

23. A display system according to claim 18 wherein said auxiliary waveguides are optically coupled to said optical panel inlet face along either a left or right portion thereof.

24. A display system according to claim 18 further comprising:

a pair of said channeling elements optically coupled to said optical panel inlet face along opposite left and right portions thereof; and

a pair of said at least one detector optically coupled to respective channeling element outlet faces.

25. A display system according to claim 24 further comprising a comparator operatively coupled to said pair of detectors for comparing a relative intensity of said spot to determine a lateral position thereof along said outlet face.

26. A display system according to claim 23 wherein said optical panel inlet face includes a light coupler thereat for redirecting said outbound image beam from said projector into said optical panel, and for redirecting said inbound light spot from said optical panel into said auxiliary waveguides.

27. A display system according to claim 18 wherein said auxiliary waveguides are in the form of ribbons.

28. A display system according to claim 27 wherein said auxiliary waveguides are stacked and are in the form of a wedge.

29. A display system according to claim 1 wherein said at least one detector comprises a linear photodiode array for determining a transverse position of said

inbound light spot on said outlet face corresponding with a position of the photodiodes in said array.

30. A display system according to claim 18 wherein said auxiliary waveguides are optical fibers.

31. A display system according to claim 20 wherein said auxiliary waveguides are optical fibers.

32. A display system according to claim 23 wherein said auxiliary waveguides are optical fibers.

33. A display system according to claim 9 wherein said at least one channeling element comprises an imaging lens optically aligned between said optical panel and said at least one detector.

34. A display system according to claim 33 wherein said imaging lens images said inbound light spot from said waveguides of said optical panel to a corresponding location on said at least one detector.

35. A display system according to claim 34 wherein said at least one detector comprises a linear photodiode array for determining a transverse position of said inbound light spot on said outlet face corresponding with a position of the photodiodes in said array.

36. A display system according to claim 34 wherein said at least one detector comprises a two-dimensional photodiode array for determining both a lateral and transverse position of said inbound light spot on said outlet face corresponding with a position of the photodiodes in said array.

37. A display system according to claim 34 wherein said at least one channeling element further comprises a light coupler optically aligned between said imaging lens

and said waveguides of said optical panel for redirecting said inbound light spot toward said imaging lens.

38. A display system according to claim 37 wherein said coupler is located at an edge of said optical panel.

39. A display system according to claim 34 wherein said optical panel inlet face includes a light coupler thereat for redirecting said outbound image beam from said projector into said optical panel, and for redirecting said inbound light spot from said optical panel toward said imaging lens.

40. A display system according to claim 1 wherein said waveguides of said optical panel are in the form of ribbons.

41. A display system according to claim 1 wherein said inbound light spot is formed by covering a spot on said outlet face with at least one covering element selected from the group consisting of finger, palm, pencil eraser, stylus, and paper.

42. A display system according to claim 41 wherein said covering element reflects at least a portion of said image beam inbound through at least one waveguide to thereby provide said inbound light spot.

43. A display system according to claim 41 wherein said covering element reflects at least a portion of said image beam into an adjoining waveguide to thereby provide said inbound light spot.

44. A display system according to claim 41 wherein said covering element is in contact with said outlet face.

45. A display system according to claim 41 wherein said covering element is spaced from said outlet face.